



Coastal Protection and
Restoration Authority of Louisiana

**State of Louisiana
Office of Coastal Protection and
Restoration**

2011 Annual Inspection Report

for

**GIWW/ CLOVELLY HYDROLOGIC
RESTORATION**

State Project Number BA-02
Priority Project List 1

August 1, 2011
Lafourche Parish

Prepared by:

Adam Ledet
Office of Coastal Protection and Restoration
Operations Division
Thibodaux Field Office
1440 Tiger Drive, Suite B
Thibodaux, La. 70301

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I. Introduction

The GIWW to Clovelly Hydrologic Restoration Project encompasses approximately 14,948 acres of marsh habitat located in the Barataria Basin near the Gulf Intracoastal Waterway (GIWW) in Lafourche Parish, Louisiana. The project is bounded to the north by an arbitrary line through the marsh from the shoreline of Little Lake to the hurricane protection levee northwest of Clovelly Farms, to the west by the South Lafourche hurricane protection levee, to the south by Breton Canal and Superior Canal, and the east by Little Lake and Bay L' Ours. (Appendix A – Project Features Map).

The GIWW to Clovelly (BA-02) project is a hydrologic restoration project consisting of four (4) fixed crest weirs, one (1) variable crest weir, four (4) canal plugs, one (1) channel plug with culvert and flap-gate, 6,000 linear feet of lake rim restoration and approximately 5,000 linear feet of earthen bank stabilization. The purpose of the project is to protect and nourish intermediate marsh in the project area by restoring natural hydrologic conditions, promote greater use of available freshwater and nutrients, limit rapid water level exchange, slow water exchange through over-bank flow, and reduce rapid salinity spikes and saltwater intrusion (Lear, E. 2003).

The GIWW to Clovelly Hydrologic Restoration Project (BA-02) is co-sponsored by the Natural Resource Conservation Service (NRCS) and the Louisiana Office of Coastal Protection and Restoration (OCPR). The project was authorized by Section 303(a) of Title III Public Law 101-646, the Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA) and enacted on November 29, 1990 as amended. The GIWW to Clovelly (BA-02) project was approved on the first (1st) Priority Project List. (LDNR O&M Plan, 2002).

II. Inspection Purpose and Procedures

The purpose of performing an annual inspection is to evaluate the constructed project features, identify any deficiencies, prepare a report detailing the condition of such features, and to recommend corrective actions needed, if any. Should it be determined that corrective actions are needed, OCPR shall provide, in report form, a detailed cost estimate for engineering, design, supervision, inspection, construction contingencies, and an assessment of the urgency of such repairs (O&M Plan, 2002). The annual inspection report also contains a summary of maintenance projects undertaken since the constructed features were completed and an estimated project budget for the upcoming three (3) years for operation, maintenance and rehabilitation. The three (3) year budget projections for operation and maintenance of the GIWW to Clovelly Hydrologic Restoration (BA-02) project are shown in Appendix C. A summary of past operation and maintenance projects undertaken since the completion of the project are outlined in Section IV of this report.

An inspection of the GIWW to Clovelly Hydrologic Restoration Project (BA-02) was held on April 14, 2011 under cloudy skies and windy conditions. In attendance were Brian Babin and Adam Ledet from OCPR, Quin Kinler, Mike Trosclair and John Boatman with NRCS, and Randy Moertle representing the landowner. The attendees met at the Clovelly Canal Public

Boat Launch. The inspection began at approximately 9:00 a.m. and ended at 12:00 p.m. Water level was recorded from gauge BA-02-57 located in Superior Canal and was determined to be 0.9' NAVD at 9:15 AM.

The field inspection included a complete visual inspection of all constructed features within the project area. Photographs of all project features were taken during the field inspection and are shown in Appendix B. Staff gauge readings, where available, were documented and used to estimate approximate water elevations, elevations of rock weirs, earthen embankments, lake-rim dike and other project features.

III. Project Description and History

Within the GIWW to Clovelly Hydrologic Restoration (BA-02) project, the average rate of change from marsh habitat to non-marsh habitat (including wetland loss to both open water and commercial development) has been increasing since the 1950's (Lear, 2003). The main reasons for wetland deterioration in the project area as reported by NRCS in the Wetlands Value Assessment (WVA) summary are saltwater intrusion, oil field activities, subsidence, lack of sedimentation, and reduced freshwater influx.

The purpose of the GIWW to Clovelly (BA-02) project is to protect intermediate marsh in the project area by restoring natural hydrologic conditions that promote greater use of available freshwater and nutrients. This will be accomplished by limiting rapid water level changes, slowing water exchange through over-bank flow, reducing rapid salinities increases, and reducing saltwater intrusion (Lear, 2003). The project objectives and specific goals outlined in the 2003 Monitoring Plan prepared by LDNR are as follows:

Project Objectives are:

- Protect and maintain approximately 14,948 acres of intermediate marsh. This will be achieved by restoring natural hydrologic conditions that promote greater freshwater retention and utilization, prevent rapid salinity increases, and reduce the rate of tidal exchange.
- Reduce shoreline erosion through shoreline stabilization

The specific goals for the project are:

- Increase or maintain marsh to open water ratios.
- Decrease salinity variability in the project area.
- Decrease the water level variability in the project area.
- Increase or maintain the relative abundance of intermediate marsh plants.
- Promote greater freshwater retention and utilization in the project area.
- Reduce shoreline erosion through shoreline stabilization.
- Increase or maintain the relative abundance of submerged aquatic vegetation (SAV).

The GIWW to Clovelly Hydrologic Restoration project involves the installation and maintenance of structures in two (2) construction units. Construction Unit No.1 and Construction Units No.2 were completed in November 1998 and October 2000, respectively.

These structures were designed to reduce the adverse tidal effects in the project area and promote freshwater introduction to better utilize available freshwater and sediment retention. If these objectives are met, it is anticipated that the rate of shoreline erosion will be reduced and a hydrologic regime, conducive to sediment and nutrient deposition, will encourage the re-establishment of emergent and submergent vegetation in eroded areas to more historic low energy environment. (Lear, 2003)

The principle project features of Construction Unit No.1 include:

- Structure 2 – Fixed crest rock weir with boat bay.
- Structure 4 – Fixed crest rock weir with boat bay.
- Structure 7 – Fixed crest rock weir with boat bay.
- Structure 8 – Rock rip rap channel plug.
- Structure 43 – Rock rip rap channel plug.
- Structure 91 – Rock plug with culvert and flap gate.

The principle project features of Construction Unit No.2 include:

- Structure 1 – Fixed crest rock weir with boat bay.
- Structure 4B – Rock rip rap channel plug.
- Structure 14A – Fixed crest rock weir with barge bay.
- Structure 35 – Variable crest weir, water control structure.
- Structure 90 – Rock rip rap channel plug.
- 5,665 linear ft. of Lake Rim Restoration
- 5,023 linear ft. of Rock Bank Stabilization
- 11,711 linear ft. of Earthen Bank Stabilization.

Structure 35 has an operation component which consists of a ten (10) ft. wide variable crest section housing twelve (12) timber stop logs. As outlined in the special conditions of project permits, Structure 35 is operated in accordance with the following operation schedule:

- Variable Crest Weir – the stop logs will be set at 0.5 ft. BML from April to November and removed from November to April (weir sill level = 2.0 ft. BML) to allow for sediment and nutrient inflow during spring.

Construction Unit No.1 has a twenty-year (20 year) project life beginning in November 1997. The twenty-year (20 year) project life of Construction Unit No.2 began in October 2000.

IV. Summary of Past Operation and Maintenance Projects

2007 Structure Operations: In accordance with the operation schedule outlined in the Operations and Maintenance Plan and the special conditions of the permit, Structure 35 has been operated during the months of April and November of each year since April 3, 2002. Operations were temporarily suspended in November 2005 due to marsh damage behind the structure following Hurricane Katrina; however, since that time, the marsh material blocking

the structure has degraded and settled to the bottom of the channel creating an opening to the interior marsh which enabled structure operations to resume in November 2007.

Navigation Aids Maintenance: Below is a short description of repairs, dates and cost associated with the service of the navigational aids located at Structure 14A:

5/16/02 – Automatic Power of Larose, La. performed maintenance and service to repair navigation lights at Structure 14A. Seventeen (17) flash bulbs were replaced at a total cost of \$421.50.

12/16/03 – Automatic Power performed maintenance and service to repair navigation lights at Structure 14A. The battery and flash bulbs were replaced in all four (4) navigation lights at a total cost of \$2,189.80.

11/4/04 – Automatic Power performed maintenance and service to repair navigation lights at Structure 14A. One (1) lamp changer, one (1) battery and flash bulbs were replaced at a total cost of \$922.23.

11/29/06 – LDNR received public bids for a state-wide maintenance contract for inspection, diagnostic testing, and maintenance of twenty-seven (27) navigational aid systems at ten (10) separate locations state-wide. Four (4) of the twenty-seven (27) navigational aid structures included in this contract are located within the GIWW to Clovelly project area at Structure 14A. The state-wide contract was awarded to the lowest bidder, Automatic Power, Inc. of Larose, La., in the amount of \$83,424. This contract is a one (1) year contract with an option to extend for another two (2) years. The notice to proceed with inspections, diagnostic testing and maintenance was issued in February 2007 and is ongoing.

V. Inspection Results

CONSTRUCTION UNIT NO.1

Structure 2 – Fixed crest rock weir with boat bay

Structure 2 is a three (3) level fixed crest weir constructed of rock riprap material. According to the as-built drawings, the sill elevation closest to the bank was constructed to an elevation of +3.9' NAVD, the section between the bank and the boat bay was constructed to +2.3' NAVD, and the boat bay was constructed to -5.1' NAVD. At the time of the inspection, the water depth in the boat bay was recorded to be 7.2' from the surface. As previously reported, there was some moderate settlement observed between the bank and boat bay (approximately 1.3' to 1.5') and severe settlement observed in the boat bay (approximately 4' to 5'). Provisions for refurbishment of the rock weir under the 2010 Maintenance Project are outlined in the conclusions of this report. All warning signs and supports are in good condition and do not require maintenance at this time. (Appendix B, Photos No.20 through No.23)

Structure 4 – Fixed crest rock weir with boat bay

Structure 4 is also a three (3) level fixed crest weir constructed of rock riprap material. According to the as-built drawings, the sill elevation closest to the bank was constructed to an

elevation of +3.8' NAVD, the section between the bank and the boat bay was constructed to +2.4' NAVD, and the boat bay was constructed to -3.9' NAVD. At the time of the inspection, the water depth in the boat bay was recorded to be 5.0' from the surface. As previously reported, there was some moderate settlement observed on the north side of the structure (approximately 1.5' to 2.0') and more severe settlement observed on the south side of the structure (approximately 6' to 7') including a breach on the south bank tie-in. Provisions for maintenance repairs and refurbishment of the rock weir are outlined in the conclusion of this report. The warning sign and supports on the north side of the structure are missing and recommended for replacement. (Appendix B, Photos No.24 through No.26)

Structure 7– Fixed crest rock weir w/ boat bay

Structure 7 looked to be in fair condition with some settlement of the rock riprap material but no visual damage to the weir or erosion around the bank tie-ins. The as-built drawings show the weir was constructed to a height of -4.4 NAVD in the boat bay and +2.4' NAVD on the north and south sides between the bank and boat bay. The water depth in the boat bay was recorded as 6.2' at the time of the inspection. These observations and supporting data from previous surveys show this structure has settled uniformly along the entire length of the structure approximately 1.0' to 1.5'. Since the settlement of Structure 7 is uniform and relatively minor, we are not recommending corrective actions at this time, but the structure will continue to be monitored during future inspections. All other signs and supports appear to be in good condition. (Appendix B, Photos No.32 through No.34)

Structure 8– Rock rip-rap weir

Structure 8 is a small rock weir with a boat bay located just north of Structure 7. This structure appears to be in fair condition with minimal settlement of the riprap material and no erosion or washouts around the bank tie-ins. This structure was originally constructed with a steel gate to prevent access into the interior marsh, but this gate was destroyed during Hurricanes Gustav and Ike. Since the gate was destroyed, the landowner has installed a series of floating barrels to restrict access, thus there is no need to replace the gate at this time. (Appendix B, Photos No.31 and No.35)

Structure 43 – Rock rip-rap channel plug

We were unable to visually inspect Structure 43 due to it being completely overgrown with vegetation. It was previously reported there was a shallow depression approximately 5 to 7 feet wide in the rock embankment on the east side of the plug, but it did not appear the depression has increased in width or depth. It is possible that water may by-pass the plug as the crest of the structure is only slightly above the existing marsh elevation, but there was no evidence of this during the inspection. All warning signs and support structures appear to be in good condition, and at this time, there are no recommendations for maintenance. (Appendix B, Photos No.1 through No.2)

Structure 91 – Rock plug with culvert and flap gate

Structure 91 rock plug structure appeared to be in good condition without any signs of rock settlement or erosion around bank tie-ins. The warning signs and timber supports were also in good overall condition. As previously noted, the sheet metal covering the timber piles supporting the corrugated metal pipe are rusted and corroded. To prevent these timbers from

rotting, the replacement of the sheet metal cap is included in the 2010 maintenance project. At the time of inspection, we were unable to operate the flap gate due to excess vegetation surrounding the gate. As part of the 2010 Maintenance Project the gate be removed, inspected, and cleaned if needed. (Appendix B, Photos No.7 through No.9)

CONSTRUCTION UNIT NO.2

Structure 1 – Fixed crest rock weir w/ barge bay

Structure 1 appeared to be in good overall condition with no observable settlement or displacement of the rock riprap material. According to the as-built drawings, the weir was constructed to a height of -6.4' NAVD at the barge bay and +4.0' NAVD along the crest on both sides of the weir between the barge bay and bank line. At 9:15 AM, the staff gauge reading from the CRMS station just north of Structure 1 was recorded to be 0.9' NAVD., and the water depth in the barge bay was recorded at 6.5'. As previously reported, there is considerable damage to the four (4) timber pile dolphins at the entrance of the barge bay. This damage is believed to be caused by oilfield service barges accessing the opening. The damage includes the vertical piles splitting, piles displace from original position, scarring on the surface of the piles, and the complete destruction of one of the four dolphin structures. Due to the poor condition of the timber dolphins, we have included provisions in the 2010 maintenance project to replace all four (4) dolphin structures. Also, as a preventative measure, we are recommending the structures be relocated approximately 6" further apart towards the bank to allow barges to move more freely through the barge bay without damaging the timber pile dolphins. A summary of proposed maintenance included in the 2010 Maintenance Project for Structure 1 are outlined in the conclusion of this report. (Appendix B, Photos No. 4 through No. 6)

Structure 4 A & 4B – Rock rip-rap channel plug

Structures 4A & 4B appear to be in poor condition with average crest elevations approximately +1.5' NAVD. According to the as-built drawings, the plug was originally constructed to a height of +3.0 NAVD. Based on these observations and supporting data from the 2008 survey profile, it is estimated the rock plug has settled approximately 1.5' to 2.0' along the entire length of the structure. In addition to the settlement, and partially caused by Hurricanes Gustav and Ike, the marsh around the plug has suffered extensive erosion. On the south side of the plug there is very large opening in the shore line approximately 1,000 feet wide. Due to the high cost of mobilizing a dredge to rebuild the marsh, it is more cost efficient to construct a rock dike across the opening. Provisions for maintenance repairs and construction of the breach closure are outlined in the conclusion of this report. (Appendix B, Photos No. 27 through No. 30)

Structure 14A – Fixed crest rock weir with barge bay

According to the as-built drawings, the crest of the weir was constructed to a height of +4.0' NAVD and the scour pad at the bottom of the barge bay was constructed to a height of -6.5' NAVD. It is estimated the rock material settlement at the crest of the weir is minimal, less than 1.0' on both sides of the barge bay. The most severe settlement and scour is near the bottom of the barge bay where previous survey data indicated bottom depths ranged between -6.5' and -15.0'. Based on the severity of the washout of the scour pad beneath the barge bay, the scour pad will be reconstructed in the 2010 Maintenance Project. The method of repair is

outlined in the conclusion of this report. The timber sub-structures supporting the navigational aids are in poor condition; there are cracks and surface damage visible on the timber pile dolphins and one of the navigational arrow signs is down. The timber pile dolphin on the southeast side of the barge bay was replaced in 2006 and remains in good condition. (Appendix B, Photos No. 39 through No. 44)

Structure 35 – Variable crest weir , water control structure

Structure 35 is in overall good condition with some signs of minor corrosion on the bulkhead cap, handrails and deck. The stop logs, cables, signs and supports appear to be in good condition and operable. At the time of inspection the channel from the weir to the interior marsh was open and there appeared to be adequate flow through the interior marsh and structure. The embankment tie-ins also appear to be in good condition with no erosion or washouts. We are not recommending any repairs or corrective actions at this time. (Appendix B, Photos No.13 through No.16)

Structure 90 – Rock rip-rap channel plug

Structure 90 appears to be in overall good condition with no rock settlement/ displacement or erosion around the embankment tie-ins. All warning signs and supports are in good condition also. There are no recommended corrective actions at this time. (Appendix B, Photos No. 10 through No. 12)

Lake Rim Restoration

The lake rim structure was constructed between a +2.0' and +3.0' NAVD with six (6) fish dips at various locations along the structure. As indicated on previous inspections and surveys, the rock dike has displayed minor to moderate settlement along the entire length of the structure. The most notable segments include segments between Stations 7+00 and 13+00, 36+00 and 41+00, and the intersection near the mouth of Breton Canal. During the 2010 field inspections, we observed additional low areas along the north bank of Breton Canal from the mouth of Bay L' Ours proceeding southwest to the first oilfield location canal where Structure 35 is located. Based on the current condition of rock dike, we have included provisions in the 2010 Maintenance Project to reconstruct the entire length of the lake rim, including the Breton Canal reach, to the original design elevation. (Appendix B: Photo No.19 through 17)

Earthen bank stabilization

The shoreline from Structure 7 to 14 was visually inspected to observe condition of breaches (see Appendix B, photo 36). There are five (5) breaches identified for repairs and/or refurbishment to be included in the upcoming 2010 Maintenance Project. Breach 1 is located along the north bank of Breton Canal just southwest of the first location canal from Bay L' Ours and is approximately 20' wide. Breach 2 is located along the northeast bank of the second location canal north of Breton Canal and is approximately 10' wide. Breach 3 is located on the south bank of the same location canal as Breach 2 and is approximately 25' wide. Breach 4 is located on the west bank of a location canal that intersects Superior Canal east of Structure No. 1 and is approximately 30' wide. Another breach, designated as Breach 5, was discovered at the end of a dead end oil field slip south of Breach 4. The recommended method of repair for these breaches is included in the conclusion of this report.

VI. Conclusions and Recommendations

Since the 2008 Annual Inspections of the GIWW to Clovelly Hydrologic Restoration (BA-02) project, a number of deficiencies have been documented that will require corrective actions and/or refurbishment. In February 2010, OCPR initiated maintenance of the GIWW to Clovelly Hydrologic Restoration - 2010 Maintenance Project by contracting MWH Americas, Inc. of Baton Rouge to perform the design and plan preparations for the deficiencies outline in Section V of this report. This project will be the first major maintenance event since the completion of the original project. Prior to beginning the design, John Chance Surveyors, Inc. of Lafayette was contracted to perform the necessary design surveys to supplement the data obtained from the 2008 surveys. The plans and specifications for the project were completed in May 2011 and have been reviewed by both OCPR and NRCS. The modification to the overall maintenance permit obtained in 2007 to include the breach closure between Structures 4A and 4 has been approved and is included the final bid package. The final bid documents have been submitted to the Louisiana Office of State Purchase to be bid and it is anticipated that construction will begin sometimes in mid August. Maps showing the work plan for the proposed 2010 Maintenance Project can be found under Appendix D.

Below is a summary of the identified deficiencies and recommended methods of repair that will be included in the 2010 Maintenance Project:

Structure No.1

The deficiencies at Structure No.1 were limited to the four (4) timber cluster piles near the entrance of the barge bay. The timber structure on the southwest side of the barge bay was completely destroyed and no longer exists, the remaining three (3) cluster piles were severely damaged with large splits down the middle of the piles, the batter piles were off center and the surface of all the timbers were worn or scarred from marine vessels rubbing the timbers while accessing the barge bay. Under the 2010 Maintenance Project, all four (4) timber pile clusters will be removed and replaced with new material including hardware, cables and signage. With concurrence from NRCS, we are also recommending that the new structures be relocated slightly outwards (6" to 1'), towards the bank, to allow for additional clearance for barge vessels to move through the barge opening without interference.

Structure No.2

The documented deficiencies at Structure No.2 were primarily due to settlement of the rock weir with the most severe settlement on the south side of the structure between the boat bay and existing bank. Under the 2010 Maintenance Project, the boat bay section and fixed crest sections be raised to the original design elevations using rock riprap. To facilitate repairs to Structure 2, access dredging from the lake to the structure may be required due to shallow conditions at the mouth of the channel.

Structure No.4

Structure No.4 was found to be in fair to poor condition with severe settlement and/or displacement of the rock material on the south side of the structure and moderate settlement of the rock lining the boat bay and rock weir section on the north side. The warning sign on the north side of the structure was also missing. Under the upcoming 2010 Maintenance Project, Structure No. 4 will be refurbished with rock riprap to restore the structure to the original

design elevation. The missing warning will also be replaced. As in the case of Structure No.2, access dredging from the bay to the structure may be required.

Structure No. 4A & 4B

The rock plug structures appeared to be in poor condition with substantial settlement ranging between 1.5' to 2.0'. The critical area of concern associated with this structure is large breach that has developed on the south side of the structure resulting from the 2008 storms. The marsh on the south side of the structure is completely gone with very little shoreline remaining to facilitate a breach closure by extending the structure. Considering the size of the breach and the vulnerability of the interior marsh in this area, we have included a rock dike closure in the 2010 Maintenance Project that consist of refurbishing Structures 4A & 4B to the original design elevation and extending the rock plug across the breach opening and along the existing shoreline approximately 1,500 linear feet, tying into Structure 4.

Structure 14A

Structure No.14A was in fair to good condition with significant damage to the timber cluster piles supporting the navigational aids and severe settlement and scour of the rock pad below the barge bay opening. We believe that the strong currents moving through the barge bay opening may be responsible for the excessive scour of the rock pad beneath the barge bay. To reduce the scour, we have included provisions in the 2010 Maintenance Project for the existing scour pad to be replaced with a larger stone. We will also be replacing three (3) of the four (4) timber pile clusters supports for the navigational aid lights as well.

Structure 91

The rock plug was in good condition with no obvious settlement or erosion around the bank tie-ins. However, we did identify minor maintenance which included severe corrosion of the metal caps covering the butts of the timber piles supporting the culvert and flap gate. To prevent rotting of the heads of the timber piles the metal sheeting on the top the timber piles will be replaced. As preventative maintenance, we will also be removing the flap gate attached to the culvert for inspection and cleaning, if required.

Lake Rim Restoration

As indicated in the inspection results and on previous inspections, a large portion of the rock dike along the lake rim has settled below the constructed crest elevation. To rehabilitate the structure, we will be recapping the entire lake rim with rock riprap under the 2010 Maintenance Project from Structure 2 to the termination point along the north bank of Breton Canal. Based on the water depths obtained during the design surveys, we do not anticipate that access dredging will be required.

Earthen bank stabilization

In all, a total of five (5) breaches ranging from 10' to 30' wide were identified within the southern portion of the project area which will be included in the 2010 Maintenance Project. Breach locations are shown in the Work Plan Map of Appendix D. The method of repair for breach closures consist of utilizing in situ material from adjacent channel bottoms to reconstruct the earthen dike. Upon completion of the earthen embankment construction, the surface of the earthen dikes will be seeded to protect against erosion.

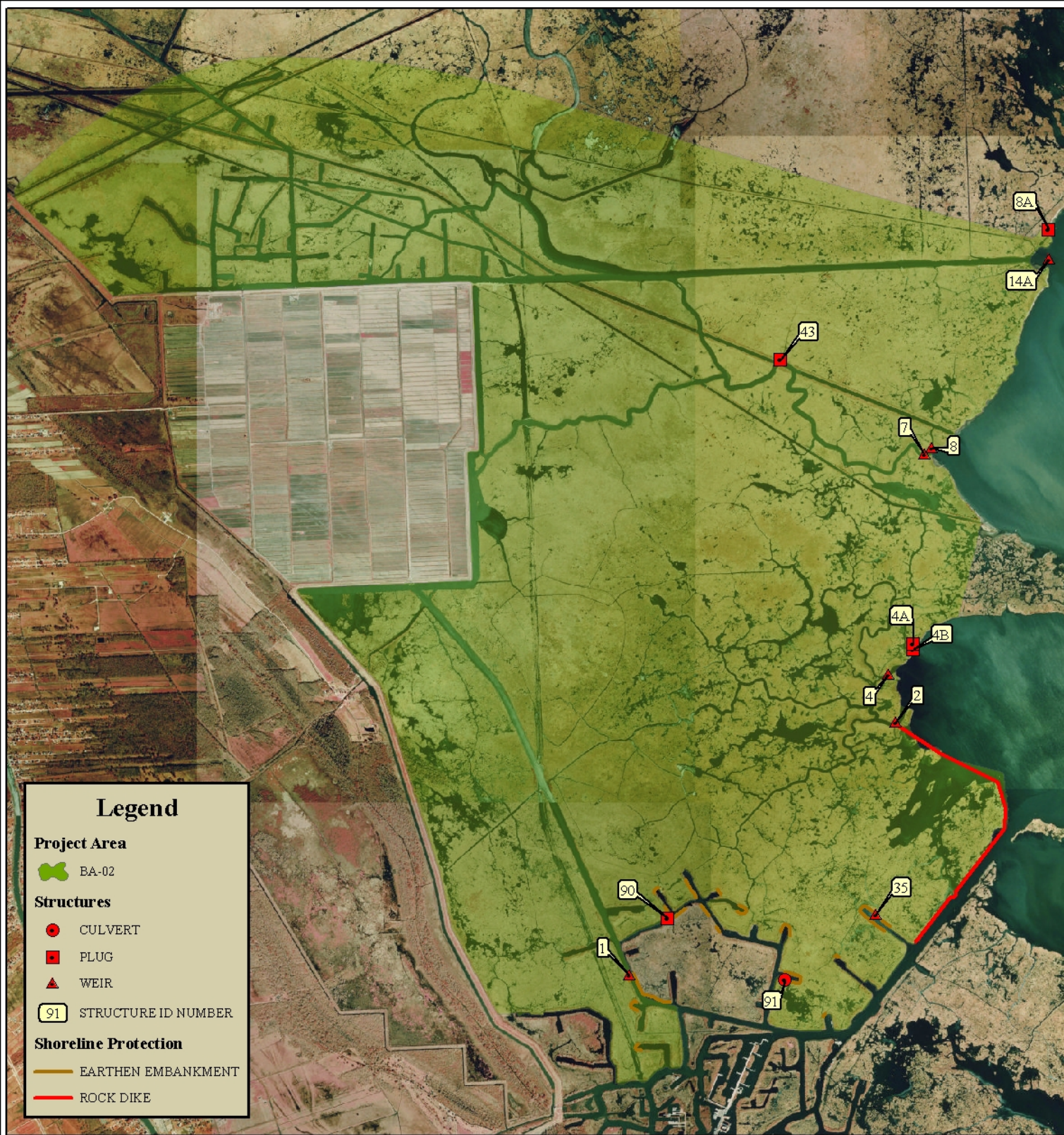
References:

Lear, E. 2003. *Monitoring Plan for the GIWW (Gulf Intracoastal Waterway) to Clovelly Project (BA-02)*, Louisiana Department of Natural Resources, Coastal Restoration Division, 24 pp.

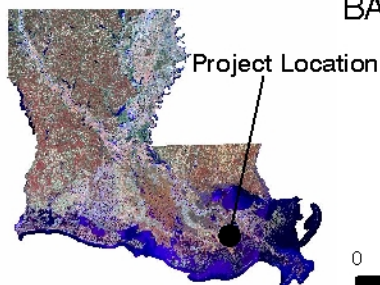
LDNR, Pyburn & Odom, Inc. 2002. *Operation, Maintenance and Rehabilitation Plan for the GIWW to Clovelly Hydrologic Restoration Project (BA-02)*. Louisiana Department of Natural Resources, Coastal Restoration Division. Baton Rouge, Louisiana, Pyburn & Odom, Inc. Baton Rouge. 8 pp plus Attachments.

Kinler, 2006. *Memorandum, GIWW to Clovelly (BA-02) – Inspection of Little Lake Shoreline South of Site 14A*. Natural Resource Conservation Service, Baton Rouge, La. 5 pp.

Appendix A
Project Features Map



BA02 - GIWW to Clovelly Hydrologic Restoration



PROJECT FEATURES MAP

0 1 2 Miles

0 2.5 5 Kilometers



Data Source:

LA Dept. Natural Resources
Coastal Engineering Division
Thibodaux Field Office

1998 DOQQ

Date: May 26, 2005

Map ID: 2005-TFO-029

Appendix B

Photographs



Photo 1: Structure 43 rock channel plug is completely overgrown with vegetation, looking north



Photo 2: Structure 43 rock channel plug is completely overgrown with vegetation, looking north



Photo 3: Gage (BA-02-57) is located along Superior Canal north of Structure No.1



Photo 4: Structure 1 damaged timber dolphin structures, looking south



Photo 5: Structure 1 fixed crest rock weir shoreline tie-in on east side, looking north



Photo 6: Structure 1 fixed crest rock weir shoreline tie-in on west side, looking north



Photo 7: Structure 91 rock plug with flap gate overgrown with vegetation view from canal, looking south



Photo 8: Structure 91 rock plug with flap gate view from structure, looking east



Photo 9: Structure 91 rock plug with flap gate view from inside impoundment area, looking south



Photo 10: Structure 90 rock channel plug bank tie-in on south side of structure, looking west



Photo 11: Structure 90 rock channel plug bank tie-in on north side of structure, looking west



Photo 12: Structure 90 rock channel plug and timber warning sign, looking west



Photo 13: Structure 35 variable crest weir water control structure, looking west



Photo 14: Structure 35 variable crest weir bank tie in on north side, looking west



Photo 15: Structure 35 variable crest weir bank tie in on south side, looking west



Photo 16: Structure 35 variable crest weir close up view, looking west



Photo 17: Rock dike shoreline protection on west side of Bay L'Ours in Little Lake, looking west



Photo 18: Rock dike shoreline protection on west side of Bay L'Ours in Little Lake, looking west



Photo 19: Rock dike shoreline protection on west side of Bay L'Ours in Little Lake, looking west



Photo 20: Structure 2 fixed crest rock weir with boat bay, looking south west



Photo 21: Structure 2 fixed crest rock weir with boat bay, looking northeast



Photo 22: Structure 2 fixed crest rock weir bank tie-in on northwest side, looking northeast



Photo 23: Structure 2 fixed crest rock weir bank tie-in on southeast side, looking northeast



Photo 24: Structure 4 fixed crest rock weir bank tie-in on north side of structure, looking west



Photo 25: Structure 4 fixed crest rock weir bank tie-in with low crest on south side of structure, looking east



Photo 26: Structure 4 fixed crest rock weir bank tie-in with low crest south side of structure, looking east



Photo 27: Structure 4B south side of rock channel plug, looking northwest



Photo 28: Structure 4B rock channel plug, looking northwest



Photo 29: Structure 4B rock channel plug, looking northwest



Photo 30: Structure 4B rock channel plug north bank tie-in, looking northwest



Photo 31: Structure 8 fixed crest rock weir with boat bay, looking north



Photo 32: Structure 7 fixed crest rock weir with boat bay, looking west



Photo 33: Structure 7 fixed crest rock weir south tie-in to bank, looking south



Photo 34: Structure 7 fixed crest rock weir north tie-in to bank, looking west



Photo 35: Structure 8 fixed crest rock weir with boat bay, looking north



Photo 36: Small breach in lake rim located between structures 7 and 14A, looking west



Photo 37: Existing shoreline along the west bank of Little Lake south of Structure 14A, looking west



Photo 38: Existing shoreline along the west bank of Little Lake south of Structure 14A, looking west



Photo 39: Structure 14A fixed crest rock weir south tie-in to bank, looking west



Photo 40: Structure 14A fixed crest rock weir with barge bay, looking west



Photo 41: Structure 14A fixed crest rock weir with barge bay, looking west



Photo 42: Structure 14A and timber warning signs fixed crest rock weir with barge bay, looking west



Photo 43: Structure 14A fixed crest rock weir with barge bay, looking west



Photo 44: Structure 14A fixed crest rock weir north tie-in to bank, looking west

Appendix C

Three Year Budget Projection

GIWW TO CLOVELLY, PHASES 1 & 2 / BAO2 / PPL1
Three-Year Operations & Maintenance Budgets 07/01/2011 - 06/30/14

<u>Project Manager</u>	<u>O & M Manager</u>	<u>Federal Sponsor</u>	<u>Prepared By</u>
	<i>A. Ledet</i>	<i>NRCS</i>	<i>A. Ledet</i>

	2011/2012	2012/2013	2013/2014
Maintenance Inspection	\$ 6,085.00	\$ 6,268.00	\$ 6,456.00
Nav. Aid Inspection/Maint.	\$ 3,000.00	\$ 3,000.00	\$ 3,000.00
Structure Operation	\$ 9,000.00	\$ 9,000.00	\$ 9,000.00
State Administration	\$ 18,500.00	\$ 3,000.00	\$ 3,090.00
Federal Administration	\$ -	\$ -	

Maintenance/Rehabilitation

11/12 Description	Routine maintenance of navigational aids and structure operations
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<i>E&D</i>	\$ 8,530.00
<i>Construction</i>	\$ 2,146,565.00
<i>Construction Oversight</i>	\$ 107,100.00
<i>Sub Total - Maint. And Rehab.</i>	<u>\$ 2,262,195.00</u>

12/13 Description:	Routine Maintenance: navigation aid maintenance and structure operations
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<i>E&D</i>	\$ -
<i>Construction</i>	\$ -
<i>Construction Oversight</i>	\$ -
<i>Sub Total - Maint. And Rehab.</i>	<u>\$ -</u>

13/14 Description:	Routine Maintenance: navigation aid maintenance and structure operations
---------------------------	---

<i>E&D</i>	\$ -
<i>Construction</i>	\$ -
<i>Construction Oversight</i>	\$ -
<i>Sub Total - Maint. And Rehab.</i>	<u>\$ -</u>

	2011/2012	2012/2013	2013/2014
Total O&M Budgets	<u>\$ 2,298,780.00</u>	<u>\$ 21,268.00</u>	<u>\$ 21,546.00</u>
Total O&M Budget 2009 through 2012			<u>\$ 2,341,594.00</u>
Unexpended O&M Budget			<u>\$ 1,455,273.38</u>
Remaining O&M Budget (Projected)			<u>\$ 886,320.62</u>

OPERATIONS & MAINTENANCE BUDGET WORKSHEET

Project: BA-02 GIWW to Clovelly Hydrologic Restoration Ph. 1 &2

FY 011/12 –

OCPR Administration	\$ 18,500*
O&M Inspection & Report	\$ 6,085
Structure Operations:	\$ 9,000
Maintenance:	\$2,277,195
E&D and Surveying:	\$ 8,530**
Construction:	\$2,146,565***
Construction Oversight:	\$ 107,100****
General Maintenance:	\$ 3,000*****

Operation and Maintenance Assumptions:

Structure Operations: water control structure operated twice annually for a total of \$4,000 per operation. (2)(\$4,000) = \$8,000 plus (\$2,000 for OCPR administration.)*

General Maintenance: Water control structure, navigation aids repair. (Construction: \$3,000)*****. (Administration: \$1,500)*

Maintenance: Refurbishment of rock structures Nos. 2, 4, 4A and 4B and the Lake Rim, repair of five (5) earthen embankment breaches and construct a rock dike closure between Structure 4A & 4B and Structure 4. The estimated construction costs for the proposed 09/10 maintenance project are detailed below:

GIWW to Clovelly Hydrologic Restoration (BA-02) – 2010 Maintenance Project Estimated Construction Cost (Base Bid):

Item No.	Description	Unit	Unit Price	Total
1	Mobilization/Demob	L.S.	\$200,000	\$ 200,000
2	Construction Surveys	L.S.	\$100,000	\$ 100,000
3	Access/ Floatation Channels	L.S.	\$ 80,000	\$ 80,000
4	Breach Repairs	L.S.	\$ 33,585	\$ 33,585
5	Temporary Warning Signs/Lights	5 Each	\$ 2,500	\$ 12,500
6	14A Nav. Aid Substructure /Sign Replacement	L.S.	\$ 56,100	\$ 56,100
7	No.1 Substructure, 4 and 91 Sign Replacement	L.S.	\$ 75,000	\$ 75,000
8	10 lb. Riprap	2,600 tons	\$ 55.00	\$ 143,000

9	130 lb. Riprap	25,000 tons	\$ 60.00	\$1,500,000
10	250 lb. Riprap	4,200 tons	\$ 90.00	\$ 378,000
11	Woven Geotextile Fabric	5,300 sq.yds.	\$ 7.00	\$ 37,100

Total Estimated Construction Cost (Base Bid): **\$2,615,285**

Estimated Construction Cost (Alternate No.1 Bid):

1	130 lb. Riprap	5,400 tons	\$ 60.00	\$ 324,000
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Total Estimated Construction Cost (Base Bid): **\$ 324,000**

Total Estimated Construction Cost (Base Bid + Alternate No.1)	\$2,939,285
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Subtract Rock Dike Extension between Structures 4 and 4a: **\$ -792,720 (FEMA)**

Total Construction Cost: **\$2,146,565**

Additional Surveying:	\$ 44,219** (Actual: Task 100% Complete)
Engineering & Design:	\$159,668** (Actual: \$8,529.79 Remaining)
Construction Inspection:	\$ 93,600*****
(120 day contract: 1,440 hrs @ \$65/hr.)	
Construction Admin:	\$ 13,500*****
(150 hrs @ \$90/hr.)	
OCPRAdmin:	\$ 20,000* (Est. \$15,000 Remaining)
	\$130,629.79 (Unexpended)

Overall Project Budget: **\$2,277,195**

Notes:

1. Access dredging: 16,000 cubic yards @ \$5/c.y.
2. Breach Repair: 2,239 cubic yards @ \$15/c.y.
3. Structure 14A: Replacement of 3 Navigational Aid Sub-structures @ \$15,000/each,
Removal and Replace Existing Navigational Aids: 3 @ \$750.

2009-2012 Accounting

O&M Budget less COE Administration	\$1,880,379
Expenditures from Lana Report	\$280,318
Expenditures from DNR Accounting	\$133,209
Unexpended O&M Budget	\$1,466,852

Approved Surplus Funds	\$792,720
Total Funds available	\$2,259,572

2011/2012 O&M Budget less construction	\$152,215
Total available for construction	\$2,107,357

FY 12/13 –

OCPR Administration		\$ 3,000*
O&M Inspection & Report		\$ 6,268
Structure Operations:		\$ 9,000
Maintenance:		\$ 3,000
E&D:	\$ 0	
Construction:	\$ 0	
Construction Oversight:	\$ 0	
General Maintenance:	\$ 3,000	

Operation and Maintenance Assumptions:

Structure Operations: water control structure operated twice annually for a total of \$4,000 per operation. $(2)(\$4,000) = \$8,000$ plus \$2,000* for OCPR administration.

General Maintenance: Water control structure, navigation aids repair. Construction: \$3000. Administration: \$1,000*

FY 13/14 –

OCPR Administration		\$ 3,000*
O&M Inspection & Report		\$ 6,456
Structure Operations:		\$ 9,000
Maintenance:		\$ 3,000
E&D:	\$ 0	
Construction:	\$ 0	
Construction Oversight:	\$ 0	
General Maintenance:	\$ 3,000	

Operation and Maintenance Assumptions:

Structure Operations: water control structure operated twice annually for a total of \$4,000 per operation. $(2)(\$4,000) = \$8,000$ plus \$2,000* for OCPR administration.

General Maintenance: Water control structure, navigation aids repair. Construction: \$3,000. Administration: \$1,000*

GIWW to Clovelly Hydrologic Restoration (BA-02)

Federal Sponsor: NRCS
Construction Completed : October 2000
PPL 1

Previous O&M Funding Requests	Baseline Approved Funding	2009	2010	Currently Funded
State O&M	\$1,235,079	\$558,844	\$0	\$1,793,923
Corps Admin	\$0	\$3,722	\$1,278	\$5,000
Federal S&A	\$0	\$86,456	\$0	\$86,456
Total	\$1,235,079	\$649,022	\$1,278	\$1,885,379

Current Approved O&M Budget June 2009	Year 0 FY99	Year - 1 FY00	Year -2 FY01	Year -3 FY02	Year -4 FY03	Year -5 FY04	Year -6 FY05	Year -7 FY06	Year -8 FY07	Year -9 FY08	Year -10 FY09	Year -11 FY10	Year -12 FY11	Year -13 FY12	Year -14 FY13	Year -15 FY14	Year -16 FY15	Year - 17 FY16	Year -18 FY17	Year -19 FY18	Project Life Budget	Currently Funded
State O&M											\$157,840	\$1,595,090	\$20,408	\$20,585	\$21,203	\$21,838	\$22,494	\$23,169	\$23,864	\$24,579	\$1,931,070	\$1,793,923
Corps Admin											\$0	\$1,225	\$1,240	\$1,257	\$1,278	\$1,301	\$1,325	\$1,349	\$1,373	\$2,329	\$12,677	\$5,000
Federal S&A											\$86,456	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$86,456	\$86,456
Total																					\$2,030,203	\$1,885,379

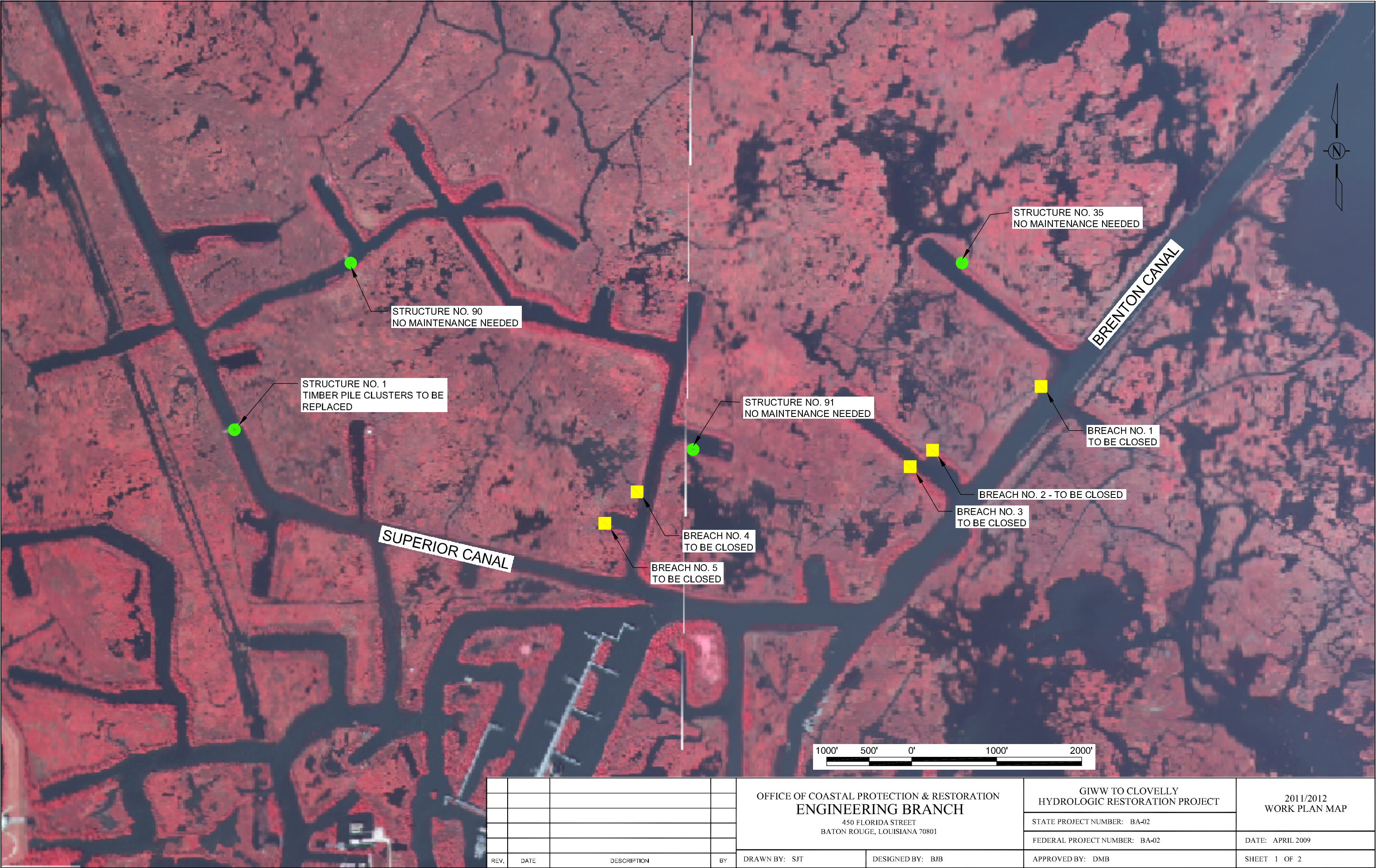
Projected O&M Expenditures																		Remaining Project Life	Current 3 year Request
Maintenance Inspection																		\$46,631	\$18,809
Structure Operation																		\$68,000	\$27,000
Navigation Aid Maintenance																		\$31,000	\$9,000
Routine Breach Repairs/Maint.																		\$0	\$0
Construction Administratoin																		\$0	\$0
OCPR Administration																		\$37,929	\$24,590
Maintenance/Rehabilitation																		\$0	\$0
E&D																		\$8,530	\$8,530
Construction																		\$1,306,927	\$1,306,927
Construction Oversight																		\$107,100	\$107,100
Total	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,459,142	\$21,268	\$21,546	\$24,838	\$25,134	\$25,438	\$28,751	\$1,606,117	\$1,501,956

O&M Expenditures from COE Report	\$280,318	Current O&M Budget less COE Admin	\$1,880,379	Current Project Life Budget less COE Admin	\$2,017,526
State O&M Expenditures not submitted for in-kind credit	\$144,787	Remaining Available O&M Budget	\$1,368,817	Total Projected Project Life Budget	\$2,117,679
Federal Sponsor MIPRs (if applicable)	\$86,456	Incremental Funding Request Amount FY12-FY14	\$133,139	Project Life Budget Request Amount	\$100,153
Total Estimated O&M Expenditures (as of April 2010)	\$511,562				

- Notes:
1. The year-by-year figures for the current Approved O&M Budget are based on the BEAST approved at the 10/28/09 Task Force meeting.
 2. Construction amount in FY12 excludes \$792,720 storm damage repairs.

Appendix D

2011 Maintenance Project Work Plan

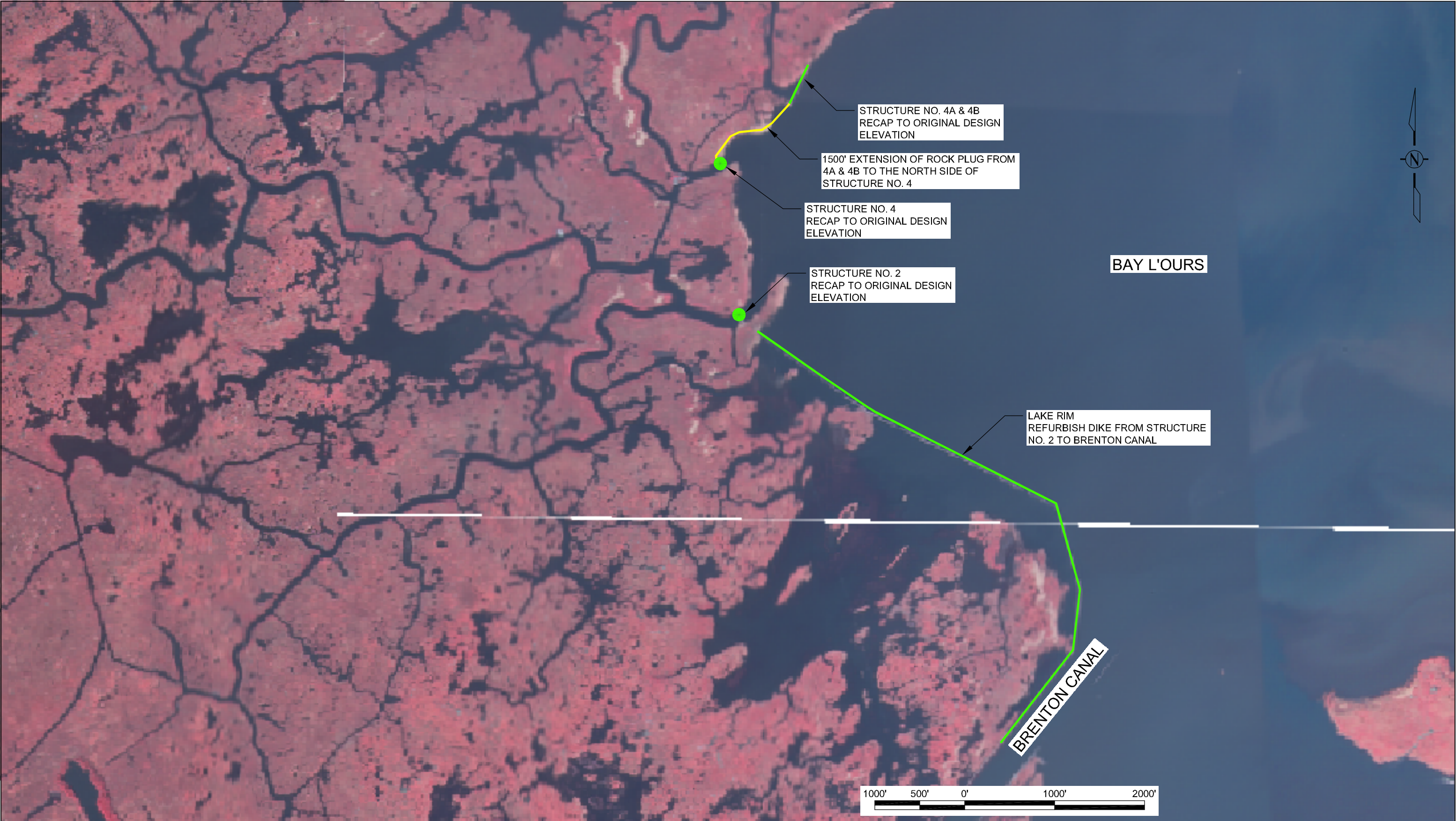


REV.	DATE	DESCRIPTION	BY

OFFICE OF COASTAL PROTECTION & RESTORATION ENGINEERING BRANCH 450 FLORIDA STREET BATON ROUGE, LOUISIANA 70801	
DRAWN BY: SJT	DESIGNED BY: BJB

GIWW TO CLOVELLY HYDROLOGIC RESTORATION PROJECT	
STATE PROJECT NUMBER: BA-02	
FEDERAL PROJECT NUMBER: BA-02	
APPROVED BY: DMB	

2011/2012 WORK PLAN MAP	
DATE: APRIL 2009	
SHEET 1 OF 2	



				OFFICE OF COASTAL PROTECTION & RESTORATION ENGINEERING BRANCH 450 FLORIDA STREET BATON ROUGE, LOUISIANA 70801	GIWW TO CLOVELLY HYDROLOGIC RESTORATION PROJECT		2011/2012 WORK PLAN MAP
					STATE PROJECT NUMBER: BA-02		
					FEDERAL PROJECT NUMBER: BA-02		DATE: APRIL 2009
REV.	DATE	DESCRIPTION	BY		DRAWN BY: SJT	DESIGNED BY: BJB	APPROVED BY: DMB